



December 30, 2024

Dakota Martonen, PE
City of Billings Public Works Department
2224 Montana Avenue
Billings, MT 59101

Reference: Traffic Impact Study Update
Annafeld Subdivision, Seventh Filing, Billings, MT
Project No. 16001.165

Dear Dakota:

The purpose of this letter is to provide a traffic impact study (TIS) update for the Seventh Filing of Annafeld Subdivision, located south of Farmstead Avenue, north of Rosemary Road, and west of St George Boulevard in Billings, Montana. This development's original masterplan TIS (Josephine Landing Subdivision TIS, February 2016) analyzed the First Filing in detail and the full build scenario. Evaluations of subsequent phases were evaluated in several traffic impact studies and updates: a February 2019 TIS for the Second and Third Filings, a December 2020 TIS update for denser commercial land use in Blocks 10 and 12, a September 2021 TIS letter for the Fourth Filing, a February 2023 TIS letter for the Fifth Filing, and an October 2024 TIS letter for the Sixth Filing. The current TIS update provides a trip generation update for the proposed re-platting of Annafeld Subdivision, Fifth Filing, Phase 2 as the Seventh Filing. Annafeld Subdivision, Fifth Filing, Phase 2 is comprised of Lots 13-16, Block 19; 1-5, Block 30; Lots 1-11, Block 31; Lots 17-45, and Block 18. Phase 1 of the Fifth Filing will remain unchanged.

Site Location and Layout

The location and proposed layout for the Seventh Filing of Annafeld Subdivision, along with the locations of other filings and Annafeld North Subdivision, is shown in Figure 1 of the attachments. The re-platted Seventh Filing is generally located west of the Fourth Filing on the northern half of the original Fifth Filing and is proposed to include 53 townhomes and 24 small single-family homes. This would replace the 72 town homes, and 50 condos originally planned for Phase 2 of the Fifth Filing. Access to the Seventh Filing is not proposed to be changed and would be made via internal subdivision connections to Farmstead Avenue, St George Boulevard, and Annafeld Parkway East/West. Annafeld Parkway East and West are the south legs of the roundabout at Elysian Road, where Annafeld Parkway east is a northbound one-way street that serves as the entering leg to the roundabout and Annafeld Parkway West is a southbound one-way street that serves as the existing leg from the roundabout. These streets will continue as one-ways south into

the Seventh Filing until their intersections with Rosemary Road. The Seventh Filing is anticipated to be occupied in 2025. A connection to East Lane is not anticipated to be completed with the Seventh Filing, but eventual completion of this connection may reduce demand at access points along Elysian Road, as some trips are likely to be made via East Lane once that access is constructed.

Trip Generation

This study utilized Trip Generation, 11th Edition, published by the Institute of Transportation Engineers (ITE), which is the most widely accepted source in the United States for determining trip generation projections. These projections are used to analyze the impacts of a new development on the surrounding area. For the purposes of this study, Land Use Code 210 – Single-Family Detached Housing, Land Use Code 215 – Single-Family Attached Housing, and Land Use Code 220 – Multifamily Housing (Low-Rise) were utilized to project trip generation for the proposed single-family homes, townhomes, and condos respectively. Table 1 below presents the results of the trip generation analysis for this study.

Table 1. Annafeld Seventh Filing Trip Generation Summary

Land Use	Independent Variable		Average Weekday			AM Peak Hour			PM Peak Hour		
	Intensity	Units	total	enter	exit	total	enter	exit	total	enter	exit
<i>Unchanged Annafeld 5th Filing Phase 1 Trips</i>											
Single-Family Detached Housing ¹	40	Dwelling Units	377	188	189	28	7	21	38	24	14
Unchanged Annafeld 5th Filing Phase 1 Trips Total			377	188	189	28	7	21	38	24	14
<i>Former Annafeld 5th Filing Phase 2 Trips</i>											
Single-Family Attached Housing ²	72	Dwelling Units	518	259	259	35	11	24	41	23	18
Multifamily Housing (Low-Rise) ³	50	Dwelling Units	337	168	169	20	5	15	26	16	10
Former Annafeld 5th Filing Phase 2 Trips Total			855	427	428	55	16	39	67	39	28
<i>Annafeld 7th Filing Re-Platted Trips</i>											
Single-Family Detached Housing ¹	24	Dwelling Units	226	113	113	17	4	13	23	14	9
Single-Family Attached Housing ²	53	Dwelling Units	382	191	191	25	6	19	30	18	12
Annafeld 7th Filing Re-Platted Trips Total			608	304	304	42	10	32	53	32	21
Total Re-Platted Net Trips			-247	-123	-124	-13	-6	-7	-14	-7	-7

- (1) Single-Family Detached Housing - Land Use Code 210*
 - Average Weekday Units = Dwelling Units
 - Average Rate = 9.43 (50% entering/50% exiting)
 - Peak Hour of the Adjacent Street, One Hour between 7 and 9 AM: Average Rate = 0.70 (25% entering/75% exiting)
 - Peak Hour of the Adjacent Street, One Hour between 4 and 6 PM: Average Rate = 0.94 (63% entering/37% exiting)
- (2) Single-Family Attached Housing - Land Use Code 215*
 - Average Weekday Units = Dwelling Units
 - Average Rate = 7.20 (50% entering/50% exiting)
 - Peak Hour of the Adjacent Street, One Hour between 7 and 9 AM: Average Rate = 0.48 (25% entering/75% exiting)
 - Peak Hour of the Adjacent Street, One Hour between 4 and 6 PM: Average Rate = 0.57 (59% entering/41% exiting)
- (3) Multifamily Housing (Low-Rise) - Land Use Code 220*
 - Average Weekday Units = Dwelling Units
 - Average Rate = 6.74 (50% entering, 50% exiting)
 - Peak Hour of the Adjacent Street, One Hour between 7 and 9 AM: Average Rate = 0.40 (24% entering, 76% exiting)
 - Peak Hour of the Adjacent Street, One Hour between 4 and 6 PM: Average Rate = 0.51 (63% entering, 37% exiting)

*Trip Generation, 11th Edition, Institute of Transportation Engineers, 2021

**Trip Generation Handbook, 3rd Edition, Institute of Transportation Engineers, 2017

The Seventh Filing is projected to reduce the previously calculated Fifth Filing Phase 2 trip total by 247 average weekday trips, with 13 fewer trips (6 entering/7 exiting) during the AM peak hour and 14 fewer trips (7 entering/7 exiting) during the PM peak hour. The Fifth Filing Phase 1 trip total will remain unchanged.

Trip generation projections provide an estimate of the total number of trips that a proposed development would generate. However, to estimate the net number of new trips made by personal vehicles external to the site, adjustments must often be made to account for internal capture trips, pass-by trips, and trips made by alternate modes.

Internal capture (IC) trips are trips that do not have origins or destinations external to a project site. Since IC trips occur internally, they do not have an impact on external traffic operations. IC trips most often occur in mixed-use developments where residential, commercial, and office-related land uses exhibit a high rate of internal trip exchange. Although the Seventh Filing will be in close proximity to the commercial sites located in Blocks 10 and 12 of the Third Filing (including a coffee shop and deli/bakery), any IC trips to that area have already been accounted for in the analysis of prior filings. It is likely that IC trips will occur from the Seventh Filing, but they will balance out with trips that have already been calculated.

Pass-by trips are trips that are made as intermediate stops on the way from the point of origin to a primary trip destination. Pass-by trips are attracted by traffic “passing by” on an adjacent street that offers direct access to that site. Pass-by trips are primarily attracted by commercial-type land uses such as restaurants, convenience markets, and gas stations. Since no commercial land uses exist in the Seventh Filing, these trips were not calculated for the Seventh Filing analysis.

A percentage of trips generated by the Seventh Filing could be made by alternate modes (walking, biking, or transit), as there is a multi-use path along Elysian Road and sidewalks throughout Annafeld Subdivision. However, since there are no transit routes currently operating on Elysian Road west of Mallowney Lane and the subdivision is generally separated from Greater Billings, alternate mode trips were conservatively considered to be negligible for this analysis. Some alternate mode trips are possible within the subdivision between filings; however, prior adjustments made for IC trips are assumed to account for this.

Trip Distribution and Traffic Assignment

Trip distribution is an estimate of the routes that site-generated trips will utilize to travel to and from the site, typically expressed on a percentage basis. A trip distribution can be estimated by several methods such as with a computerized travel demand mode, calculation of travel time for various available routes, and the inspection of existing traffic patterns within the project area. For this update, Sanbell reviewed distribution calculated for

previous evaluations of Annafeld Subdivision as well as new intersection count data from 2024 to determine an assignment distribution.

Traffic assignment is the procedure whereby site-generated vehicles trips are assigned to study area streets, intersections, and site access driveways based on the anticipated trip distribution and the physical attributes of the site and surrounding roadways. Figure 2 attached illustrates the trip distribution and site-generated AM and PM peak hour traffic assignments for the Seventh Filing of Annafeld Subdivision.

Contribution Calculations

Proposed financial contributions were based on the traffic assignment volumes for the Fifth and Seventh Filings of Annafeld Subdivision. The original calculations performed for the Fifth Filing Phase 1 and total are presented, as well as the updated calculations for the re-platted Seventh Filing combined with the remainder of the unchanged Fifth Filing, Phase 1. The Fifth and Seventh Filing’s portions of critical lane volumes for the affected intersections are shown in Table 2 below.

Table 2. Annafeld Seventh Filing Financial Contributions Summary

Intersection	Previously Paid Contribution Amount	Re-Platted Contribution Calculations		Updated Contribution Amount
	Original 5th Filing Contribution (\$350k)	5th Filing Phase 1 Contribution (\$350k)	7th Filing Contribution (\$450k)	5th Filing Phase 1 + 7th Filing
Muldowney Lane & S Frontage Road/Midland Road	2.42%	0.79%	1.38%	2.17%
Muldowney Lane & Elysian Road	3.50%	1.42%	1.83%	3.25%
Elysian Road & East Lane	1.50%	0.50%	0.58%	1.08%
Elysian Road & Frontage Road	1.05%	0.44%	0.53%	0.97%
East Lane & S Frontage Road	0.53%	0.18%	0.09%	0.27%
Total Percent Contribution	9.00%	3.33%	4.41%	7.74%
Total Dollar Contribution	\$ 31,500.00	\$ 11,655.00	\$ 19,845.00	\$ 31,500.00

The percentages have been converted into dollar figures based on the previous and current City of Billings intersection cost participation values. The cost participation value at the time of the original Annafeld Fifth Filing was \$350,000.00 but has since changed to \$450,000.00 as of July 1, 2024. The difference between the previously paid contribution amount and updated contribution amount is \$0.00. Financial contribution calculation worksheets for the re-platted Seventh Filing are included in the attachments.

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Conclusions & Recommendations

The preceding analysis has shown that the re-platting of Annafeld Subdivision, Fifth Filing, Phase 2 as the Seventh Filing will reduce trip generation projections by approximately 247 trips per day.

If you have any questions about this assessment, or if additional analysis is required, please feel free to contact me at 406-922-4306 or jstaszczuk@sanbell.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Joey Staszczuk". The signature is fluid and cursive, with the first name "Joey" written in a larger, more prominent script than the last name "Staszczuk".

Joey Staszczuk, PE, PTOE, RSP1
Associate Principal | Community Transportation Studio Manager

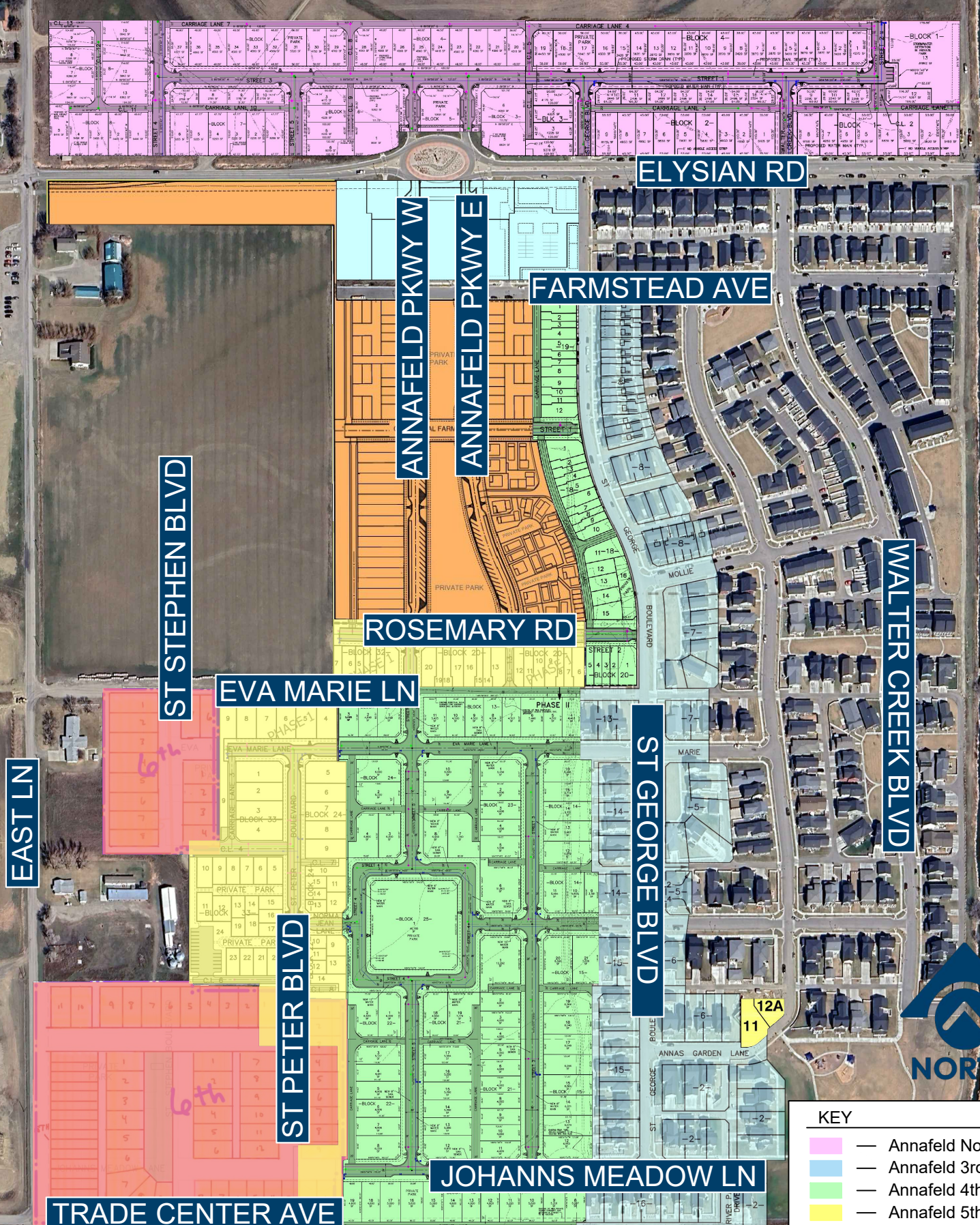
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- Site Layout
- Trip Assignment & Distribution
- Financial Contribution Calculation Worksheets

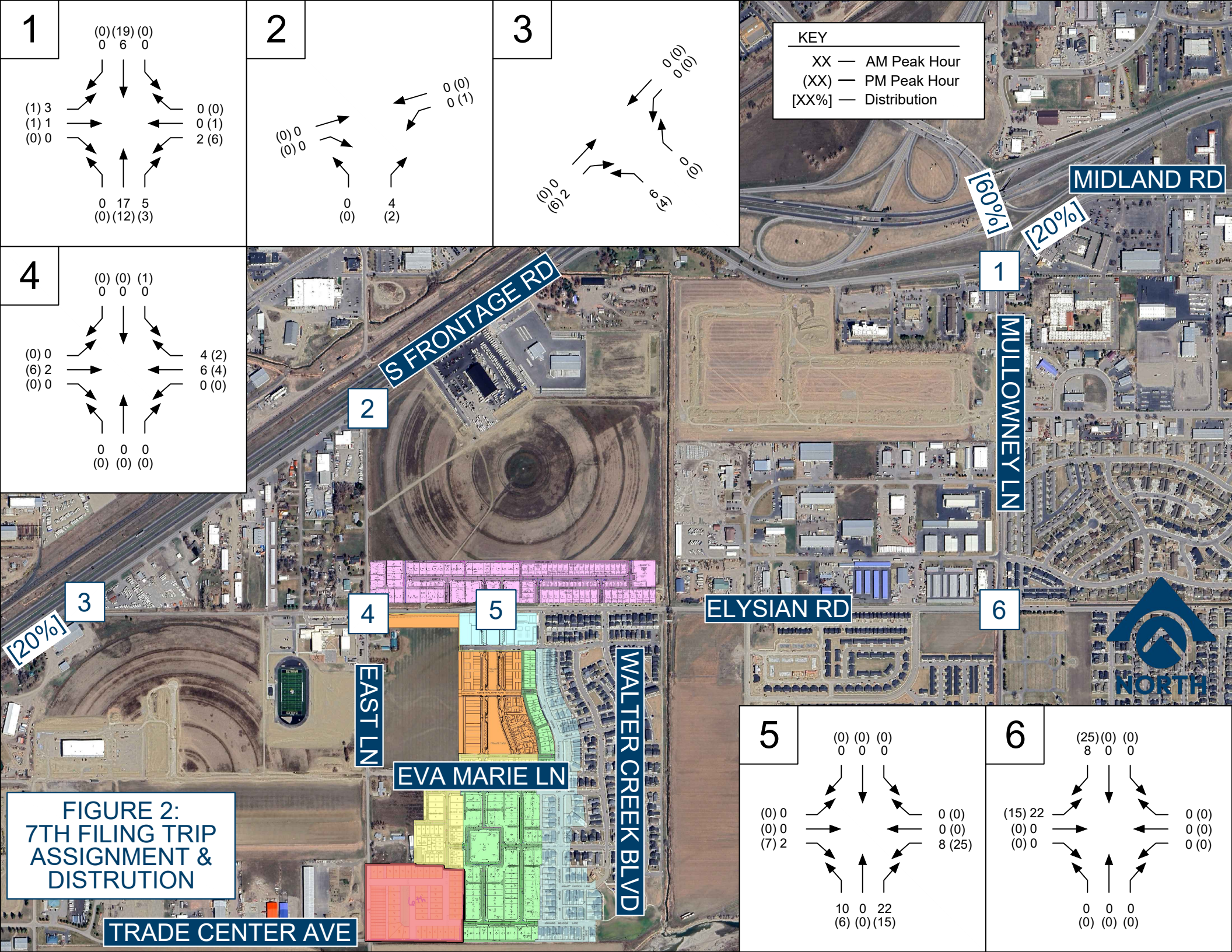
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**FIGURE 1:
SITE LAYOUTS**



KEY

	Annafeld North
	Annafeld 3rd Filing
	Annafeld 4th Filing
	Annafeld 5th Filing
	Annafeld 6th Filing
	Annafeld 7th Filing



Intersection: Mullowney Lane & S Frontage Rd/Midland Rd - 7th Filing 2025

Approach		AM Peak		PM Peak		Number of Lanes
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	
NB	T	17	9	12	6	2
	L	0	0	0	0	1
SB	T	6	3	19	10	2
	L	0	0	0	0	1
EB	T	1	1	1	1	1
	L	3	3	1	1	1
WB	T	0	0	1	1	1
	L	2	2	6	6	1
Critical Lane Sum Increase:		12		17		
Critical Lane Sum:		1200		1200		
Peak Hour %:		0.96%		1.38%		
Highest %:		1.38%				

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Intersection: Mullowney Lane & Elysian Road - 7th Filing 2025

Approach		AM Peak		PM Peak		Number of Lanes
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	
NB	T	0	0	0	0	1
	L	0	0	0	0	1
SB	T	0	0	0	0	1
	L	0	0	0	0	1
EB	T	0	0	0	0	1
	L	22	22	15	15	1
WB	T	0	0	0	0	1
	L	0	0	0	0	1
Critical Lane Sum Increase:		22		15		
Critical Lane Sum:		1200		1200		
Peak Hour %:		1.83%		1.25%		
Highest %:		1.83%				

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Intersection: Elysian Road & East Lane - 7th Filing 2025

Approach		AM Peak		PM Peak		Number of Lanes
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	
NB	T	0	0	0	0	1
	L	0	0	0	0	1
SB	T	0	0	0	0	1
	L	0	0	1	1	1
EB	T	2	2	6	6	1
	L	0	0	0	0	1
WB	T	6	6	4	4	1
	L	0	0	0	0	1
Critical Lane Sum Increase:		6		7		
Critical Lane Sum:		1200		1200		
Peak Hour %:		0.50%		0.58%		
Highest %:		0.58%				

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Intersection: Elysian Road & S Frontage Road - 7th Filing 2025

Approach		AM Peak		PM Peak		Number of Lanes
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	
NB	T	0	0	0	0	1
	L		0		0	1
SB	T	0	0	0	0	1
	L	0	0	0	0	1
EB	T		0		0	1
	L		0		0	1
WB	T		0		0	1
	L	6	6	4	4	1
Critical Lane Sum Increase:		6		4		
Critical Lane Sum:		1140		1140		
Peak Hour %:		0.53%		0.35%		
Highest %:		0.53%				

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Intersection: East Lane & S Frontage Road - 7th Filing 2025

Approach		AM Peak		PM Peak		Number of Lanes
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	
NB	T		0		0	1
	L	0	0	0	0	1
SB	T		0		0	1
	L		0		0	1
EB	T	0	0	0	0	1
	L		0		0	1
WB	T	0	0	0	0	1
	L	0	0	1	1	1
Critical Lane Sum Increase:		0		1		
Critical Lane Sum:		1140		1140		
Peak Hour %:		0.00%		0.09%		
Highest %:		0.09%				

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection